AEROSPACE ENGINEERING (AEE)

AEE 500 Selected Topics (1-6 Credits)
Engineering & Comp Sci
Exploration of a topic (to be determined) not covered by the standard curriculum but of interest to faculty and students in a particular semester.
Repeatable

AEE 527 Helicopter Dynamics (3 Credits)
Engineering & Comp Sci
Introduction to the helicopter; hover- and vertical-flight analysis; autorotation and vertical descent; blade motion and rotor control; aerodynamics of forward flight.
Prereq: AEE 342 and 427

AEE 542 Hypersonic/High Temperature Gas Dynamics (3 Credits)
Engineering & Comp Sci
Inviscid and viscous hypersonic fluid dynamics with and without high temperature effects. Approximate and exact methods for analyzing hypersonic flows. Elements of statistical thermodynamics, kinetic theory, and nonequilibrium gas dynamics. Experimental methods.
Prereq: MAE 251 and AEE 343

AEE 577 Introduction to Space Flight (3 Credits)
Engineering & Comp Sci
Two-body orbital mechanics, orbits and trajectories, interplanetary transfers, vehicle and booster performance.
Prereq: ECS 222
Shared Competencies: Critical and Creative Thinking (https://coursecatalog.syracuse.edu/shared-competencies/critical-and-creative-thinking/); Scientific Inquiry and Research Skills (https://coursecatalog.syracuse.edu/shared-competencies/scientific-inquiry-and-research-skills/)

AEE 600 Selected Topics (1-6 Credits)
Engineering & Comp Sci
Exploration of a topic (to be determined) not covered by the standard curriculum but of interest to faculty and students in a particular semester.
Repeatable

AEE 628 Adv Spacecraft Dyn (3 Credits)
Engineering & Comp Sci
Analytical techniques, including dyadic operators for rotational motion, Lambert's theorem and its use in spacecraft mission analysis computer programs, and Bierman's factorized estimation board.

AEE 630 Spacecraft Dynamics & Control (3 Credits)
Engineering & Comp Sci
Stability; spacecraft orbital dynamics and control; Lagrange points; attitude representations like rotation matrix, Euler angles, and Euler parameters; attitude kinematics; attitude determination (Wahba¿s problem); attitude dynamics; inertia tensor; gravity gradient torque; attitude stabilization and control.

AEE 636 Strctral Dynamics/Vehicle (3 Credits)
Engineering & Comp Sci
Static aeroelasticity, unsteady aerodynamics of airfoils and wings, lifting surface flutter, panel flutter, and dynamic response including modal techniques.
Advisory recommendation Prereq: MAE 627

AEE 637 Adv/Mech/Aerospce/Structr (3 Credits)
Engineering & Comp Sci
Structural problems not amenable to elementary analysis, such as swept and delta wings, stresses around cutouts, shear lag, torsion with restrained warping, general instability of stiffened shells, thermal stresses. Matrix and energy methods.

AEE 690 Independent Study (1-6 Credits)
Engineering & Comp Sci
Exploration of a problem, or problems, in depth. Individual independent study upon a plan submitted by the student. Admission by consent of supervising instructor(s) and the department.
Repeatable

AEE 700 Selected Topics (1-6 Credits)
Engineering & Comp Sci
Exploration of a topic (to be determined) not covered by the standard curriculum but of interest to faculty and students in a particular semester.
Repeatable

AEE 747 Hypersonic Gas Dyn (3 Credits)
Engineering & Comp Sci
Classification, physical properties of hypersonic flows. Thickness and structure of shock fronts. Real gas effects, relaxation phenomena. Compressible viscous boundary layer flows. Shock layer flows. Two-layer Newtonian flow models. Aerodynamic applications. Hypersonic flow generation, simulation.
Advisory recommendation Prereq: MAE 647

AEE 787 Plasma Dynamics (3 Credits)
Engineering & Comp Sci

AEE 800 Selected Topics (1-6 Credits)
Engineering & Comp Sci
Exploration of a topic (to be determined) not covered by the standard curriculum but of interest to faculty and students in a particular semester.
Repeatable

AEE 863 Adv Aerodynamics (0 Credits)
Engineering & Comp Sci

AEE 990 Independent Study (1-6 Credits)
Engineering & Comp Sci
Exploration of a problem, or problems, in depth. Individual independent study upon a plan submitted by the student. Admission by consent of supervising instructor(s) and the department.
Repeatable

AEE 996 Special Project (0-6 Credits)
Engineering & Comp Sci
Repeatable

AEE 997 Masters Thesis (0-9 Credits)
Engineering & Comp Sci
Repeatable

AEE 999 Dissertation (0-15 Credits)
Engineering & Comp Sci
Repeatable